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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/519,719 03/07/00 NOORBAKHS

H 4150

EXAMINER

IM52/1011

Patent Counsel
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ALEJANDRO MUIERO, I

ART UNIT

PAPER NUMBER

1763

DATE MAILED:

10/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/519,719

Applicant(s)

NOORBAKSH ET AL.

Examiner

Luz L. Alejandro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 1-10, 16-20 and 29-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 11-15 and 21-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-36 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-10, drawn to a thermally controlled apparatus, classified in class 118, subclass 724.
- II. Claims 11-28, drawn to a processing chamber having a liner, classified in class 156, subclass 345.
- III. Claims 29-36, drawn to a nozzle, classified in class 156, subclass 345.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and III, and II and III are related as combination and subcombination.

Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because it does not require the use of a nozzle for providing the entrance of the fluid. The subcombination has separate utility such as in a plasma apparatus or in an apparatus in which non-semiconductor substrates are processed.

Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In

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the instant case the different inventions they have different modes of operation, different functions, or different effects.

Because these inventions are distinct for the reasons given above and the search required for one group is not required the other groups, and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

During a telephone conversation with Todd Paterson on 10/03/01 a provisional election was made with traverse to prosecute the invention of group II, claims 11-28. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-10 and 29-36 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

In addition, this application contains claims directed to the following patentably distinct species of the claimed invention: specie A directed to a first liner disposed proximate the lid assembly; and specie B directed to a second liner disposed about the substrate support.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, 11-15 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim

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is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Todd Paterson on 10/05/01 a provisional election was made with traverse to prosecute the specie A, claims 21-28. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

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reference numbers 126, 128, 130, 131, 148, 150, 151, 152, 188, 226, 350, 604, and 606. Correction is required.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: reference number 310 (see the specification of the instant application at pages 7 and 8). Correction is required.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "134" and "118" have both been used to designate the same liner in fig. 1. Correction is required.

The drawings are objected to because reference number 122 in figure 1, it pointing the bottom wall of the chamber instead of the O-ring (see the specification of the instant application at page 7-line 2). Correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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Claims 11-12, 14-15, 21-22, and 24-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Kao et al., US Patent 6,176,198.

Kao et al. shows the invention as claimed including a processing chamber 10 comprising: a wall 16, a bottom wall 18 and a lid assembly (see col. 2, line 36) defining a chamber volume; a substrate support 101 disposed within the chamber volume; and chamber liner 24. Also, faceplate 124 can be considered a liner for the blocker plate 122 and the lid assembly. Both liners, 24 and 124, are disposed in the chamber volume and proximate to the lid assembly. Chamber liner 24 has a passage which has an inlet and an outlet adapted to flow a fluid through the passage (see fig. 3), and it is made of a dielectric material such as a ceramic (see col. 2, lines 52-54). Liner 124 has a plurality of passages in which gases pass therethrough (see col. 5, lines 1-7); it also comprises a center member having the passages disposed within, a flange circumscribing the center member and a cylindrical wall projecting from the center member inside the flange (see fig. 3). The apparatus of Kao et al. further comprises a plenum defined by the lid and the cylindrical wall, and wherein a gas feedthrough is fluidly coupled to the plenum through a hole disposed in the lid (see fig. 3).

Claims 11-12, 14-15, 21-22, and 24-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Lei et al., US Patent 5,968,276.

Lei et al. shows the invention as claimed including a processing apparatus comprising: a blocker plate 22 (which can be considered a liner for the lid assembly) made of quartz, and having a plurality of apertures formed at least partially therein in

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which gases pass therethrough. The liner 22 it also comprises a center member having the passages disposed within, a flange circumscribing the center member and a cylindrical wall projecting from the center member inside the flange (see fig. 10). The apparatus disclose by Lei et al. further comprises a lid having an inlet, the lid disposed proximate the liner and defining a plenum at least partially therebetween (see figs. 2 and 10 and their description). The plenum defined by the lid and the cylindrical wall of the liner, and wherein a gas feedthrough is fluidly coupled to the plenum through a hole disposed in the lid (see fig. 10). It is inherent that the apparatus further comprises a wall and a bottom and a substrate support as to be able to performed the semiconductor wafer processes.

Claims 11-12 and 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Pu et al., US Patent 6,273,022.

Pu et al. shows the invention as claimed including a processing chamber comprising: a wall 12, a bottom wall 14 and a lid assembly 10 defining a chamber volume; a substrate support 16 disposed within the chamber volume; and chamber liner 26 disposed in the chamber volume and proximate to the lid assembly. Chamber liner 26 has a passage which has an inlet and and outlet adapted to flow a fluid through the passage (see col. 4, lines 46-48 and fig. 1), and it is made of aluminum (see col. 4, lines 37-38).

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kao et al., US 6,176,198.

Kao et al. is applied as above but does not expressly disclosed that the chamber liner is retained in the chamber by a clamp. In response, the examiner takes official notice that clamps are well known suitable fasteners in the art and its inclusion in the Kao et al. apparatus would be prima facie obvious, in order to removably attached the liner to the chamber.

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Claims 23, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kao et al., US 6,176,198, in view of Ishikawa et al., US 6,143,078.

Kao et al. is applied as about but lacks anticipation of showing the use of nozzles. Ishikawa et al. disclose a processing apparatus in which nozzles disposed in each of a plurality of apertures are used to introduced the gas at different angles (see fig. 9 and it description). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus disclosed by Kao et al., as to further comprise nozzles in each of the plurality of gas apertures in order to optimize the apparatus and the process being performed within it, by introducing the processing gases at predetermined (different) angles.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kao et al., US 6,176,198, in view of Ishikawa et al., US 6,143,078 as applied to claims 23, 26 and 28 above, and further in view of Takeuchi et al., US 5,824,158.

Kao et al. and Ishikawa et al. do not expressly disclose that the nozzles are comprised of any of the claimed materials. Takeuchi et al. disclose a processing apparatus in which a nozzle made of quartz is used as to prevent the inclusion of impurities in the process gas (see col. 11, lines 53-56). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Kao et al. and Ishikawa et al. as to comprise nozzles made of quartz in order to prevent the inclusion of impurities in the processing gas.

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Claims 23, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lei et al., US Patent 5,968,276, in view of Ishikawa et al., US 6,143,078.

Lei et al. is applied as about but lacks anticipation of showing the use of nozzles. Ishikawa et al. disclose a processing apparatus in which nozzles disposed in each of a plurality of apertures are used to introduced the gas at different angles (see fig. 9 and it description). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus disclosed by Lei et al, as to further comprise nozzles in each of the plurality of gas apertures in order to optimize the apparatus and the process being performed within it, by introducing the processing gases at predetermined (different) angles.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lei et al., US 5,968,276, in view of Ishikawa et al., US 6,143,078 as applied to claims 23, 26 and 28 above, and further in view of Takeuchi et al., US 5,824,158.

Lei et al. and Ishikawa et al. do not expressly disclose that the nozzles are comprised of any of the claimed materials. Takeuchi et al. disclose a processing apparatus in which a nozzle made of quartz is used as to prevent the inclusion of impurities in the process gas (see col. 11, lines 53-56). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Lei et al. and Ishikawa et al. as to comprise nozzles made of quartz in order to prevent the inclusion of impurities in the processing gas.

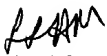
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 703-305-4545. The examiner can normally be reached on 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3599 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


LLAM
October 9, 2001


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700